REMARKS

The Office Action dated November 22, 2002 has been reviewed. Paragraph 0021 has been amended solely for consistency with the rest of the application as originally filed, claims 1, 4, 14 and 16 have been cancelled without prejudice or disclaimer, and claims 2, 3, 5, 6, 13 and 15 have been amended. Claims 2, 3, 5-13, 15 and 17-27 are currently pending in the application, and are respectfully submitted for reconsideration by the Examiner.

Before turning to the substantive issues raised in the Office Action, Applicants respectfully request that the Examiner acknowledge the claim for domestic priority under 35 U.S.C. § 119 (e) to provisional Application No. 60/225,860.

Claim 2 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Rather than being indefinite, it is respectfully submitted that the original identification of the claim's dependency was merely an inadvertent typographical error, and that the Examiner correctly assumed that the proper dependency was from claim 1. In any event, it is respectfully submitted that this rejection is moot inasmuch as claim 2 has been amended to depend from independent claim 3. It is respectfully submitted that all pending claims comply with the requirements of 35 U.S.C. § 112, and withdrawal of the rejection is requested.

Claims 1-10, 13-18 and 22-27 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,474,048 to Yamazaki et al. (Yamazaki). Claims 1-10, 13-18 and 22-27 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,584,278 to Satoh et al. (Satoh). Claims 4-21 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,164,312 to Bostedo et al. (Bostedo). And claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamazaki or Satoh. These rejections are respectfully traversed in view of the above amendments and the following comments.

Independent claim 3 recites a combination of features including a "first port being in fuel vapor communication with the fuel vapor collection canister," "a fuel tank being in fuel vapor communication with the second port of the isolation valve," and "a first sub-chamber extending from the first port to the aperture and being defined by the interior partition, the central portion of the diaphragm, and the first section of the housing; a second sub-chamber extending from the aperture to the second port and being defined by the interior partition, the intermediate portion of the diaphragm, and the second segment of the second section of the housing; and a third sub-chamber enclosing the coil spring and being defined by the first segment of the second section of

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the housing and the central and intermediate portions of the diaphragm." Similarly, independent claim 17 recites a combination of features including "a first port adapted to be connected in fluid communication with a fuel vapor collection canister, a second port adapted to be connected in fluid communication with a fuel tank" and "a first sub-chamber, a second sub-chamber, and a third sub-chamber, the first sub-chamber extending from the first port to the aperture and being defined by the interior partition, the diaphragm, and the first section of the housing, the second sub-chamber extending from the aperture to the second port and being defined by the interior partition, the diaphragm, and the second segment of the second section of the housing, and the third sub chamber enclosing the resilient element and being defined by the diaphragm and the first segment of the second section of the housing." And independent claim 22 recites a combination of features including "a first port being adapted for fuel vapor communication with the evaporative emission space of the fuel tank and including a second port being adapted for fuel vapor communication with the fuel vapor collection canister," "moving the diaphragm to the first configuration in response to a second pressure level at the second port, the second pressure level being below atmospheric pressure," and "moving the diaphragm to the second configuration in response to a first pressure level at the first port, the first pressure level being above atmospheric pressure."

Support for these features may be found at, for example, paragraphs 0020-0023 and Figures 2 and 3 of Applicants' specification as originally filed. No new matter has been added. In particular, Applicants' outlet section 130 is connected for fluid communication, via outlet port 122c, with fuel vapor collection canister 12, and Applicants' inlet section 140 is connected for fluid communication, via inlet port 122t, with fuel tank 16. Consequently, a central portion 162 of Applicants' diaphragm 160 occludes the aperture 126 so as prevent fluid flow between the inlet and outlet ports 122t,122c, which is enhanced by a pressure level below atmospheric pressure at the outlet port 122c (Applicants' paragraph 0028). Then, diaphragm 160 is moved to the second configuration in response to a first pressure level above atmospheric pressure at the inlet port 122t acting on an intermediate portion 162 of Applicants' diaphragm 160 (Applicants' paragraph 0028).

Satoh shows a first diaphragm 74 (in addition to a second diaphragm 104) dividing a first chamber 76 and a second chamber 78. The second chamber 78 communicates via conduit 38 with the inlet portion 16 of the fuel filler tube 14 (Satoh column 6, lines 38-40), i.e., as opposed to being vented as asserted in the Office Action. Moreover, in direct contrast to Applicants'

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invention, Satoh's Figures 1 and 3 show a vent outlet opening 96 connected at its lower portion with an upstream vent passageway 98 extending radially outwardly to communicate, via the vent inlet port 93 and the vent tube 44, with tank body 12 (Satoh column 7, lines 19-23). Thus, Satoh shows the reverse structural arrangement with respect to Applicants' invention.

Yamazaki's system, like that of Satoh, shows a chamber 7a that communicates via a passage 6 with the pressure intake port section 5 of the fuel filler tube 2, i.e., as opposed to communicating with the ambient environment. According to Yamazaki, with reference to Figure 2, at times other than refueling, the first and second chambers 7a and 7b of the diaphragm valve 7 are under almost equal pressure, whereby the diaphragm valve is kept closed (column 4, lines 49-59). And with reference to Figure 3, Yamazaki states that during refueling, pressure in the vicinity of the pressure intake port section 5 in the filler tube 2 is reduced and, as the supply of fuel in the fuel tank 1 rises, the pressure in second chamber 7b of the diaphragm valve 7 increases so at to open the diaphragm valve 7 (column 4, line 60, to column 5, line 5). Moreover, Yamazaki shows only schematically the diaphragm valve 7. As such, Yamazaki's Figure 2 shows a chamber that extends from a canister 14 to an end of the passage 12 associated with the valve element 9, and that chamber is defined solely by the passage 12 and valve element 9, i.e., independent of any portion of the housing for the diaphragm valve 7. Thus, it is respectfully submitted that Yamazaki's illustrations of the diaphragm valve 7 fail to show the features of Applicants' isolation valve.

Bostedo shows "a valve for purging contaminant liquids from a railway vehicle brake air line which is subject to pressure variations" (column 1, lines 15-17). In particular, Bostedo states that when the brakes of a locomotive are applied, the pressure in the independent brake line increases rapidly and valve 10 opens and during a brief time, air and any contaminant liquids are purged through exhaust 34 (column 5, lines 10-16). Bostedo states that valve 10 has a low impedance discharge flow path 42 and a high impedance control flow path 50, both of which are connected to a conduit 50 (Bostedo Figures 4 and 7) from which liquid is to purged (column 4, lines 43-46). Thus, Bostedo shows that annular chamber 40 and control chamber 32 are commonly connected to conduit 50, which is in stark contrast to Applicants' invention.

Thus, for at least these reasons, it is respectfully submitted that neither Satoh, nor Yamazaki, nor Bostedo, whether considered individually or in combination, teach or suggest the claimed invention as a whole, and it is respectfully requested that independent claims 3, 17 and 22 are allowable.

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Claims 2, 5-13, 15, 18-21 and 23-27 ultimately depend from one of allowable claims 3, 17 and 22, and are also respectfully submitted to be allowable for at least the same reasons as the independent claims, as well as for the additionally recited features that further distinguish over the applied prior art. Thus, allowance of these dependent claims is respectfully requested.

In view of the foregoing, Applicants respectfully request reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Attached hereto is a marked up version of the changes made by this amendment. The attached pages are captioned Version with Markings to Show Changes Made.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Paragraph 0021 has been amended as follows:

[0022] The housing 120 also includes an interior partition 124 that defines an aperture 126 and conceptually separates the housing 120 into an outlet section 130 and an inlet section 140. The diaphragm 160 divides the inlet section 140 of the housing 120 into a [body] cover segment 142 and a [cover] body segment 150. Thus, the chamber defined by the housing 120 may be considered to be composed of three sub-chambers. A first sub-chamber 132 extends from the aperture 126 to the outlet port 122c, and is defined by the interior partition 124, the diaphragm 160, and the outlet section 130 of the housing 120. A second sub-chamber 152 extends from the inlet port 122t to the aperture 126, and is defined by the interior partition 124, the diaphragm 160, and the body segment [142] 150 of the inlet section 140 of the housing 120. A third sub-chamber 144 encloses the resilient element 180, and is defined by the diaphragm 160 and the cover segment 142 of the inlet section 140 of the housing 120.

IN THE CLAIMS:

Claims 1, 4, 14 and 16 have been cancelled without prejudice or disclaimer.

Claims 2, 3, 5, 6, 13 and 15 have been amended as follows:

2. (Amended) The system according to claim [18] 3, wherein [the diaphragm divides the second section of the housing into first and second segments, and the diaphragm comprises:

a central portion engaging the second end of the coil spring;

a peripheral portion being fixed with respect to the housing; and

an intermediate portion extending between the central and peripheral portions,] the intermediate portion [including] of the diaphragm comprises a flexible material relative to the central portion.

3. (Amended) A [The] system [according to claim 2, wherein] for controlling evaporative emissions of a volatile fuel, the system comprising:

a fuel vapor collection canister;

an isolation valve including:

a housing defining a chamber, the housing including an interior partition, a first port, and a second port, the interior partition defining an aperture and separating the housing into first and second sections, and the first port being in fuel vapor communication with the fuel vapor collection canister;

a diaphragm dividing the second section of the housing into first and second segments, the diaphragm including a central portion engaging the second end of the coil spring, a peripheral portion being fixed with respect to the housing, and an intermediate portion extending between the central and peripheral portions, the diaphragm being movable with respect to the housing between a first configuration and a second configuration, the first configuration occluding the aperture so as to substantially prevent fuel vapor flow between the first and second ports and dividing the chamber into three sub-chambers including:

a first sub-chamber extending from the first port to the aperture and being defined by the interior partition, the central portion of the diaphragm, and the first section of the housing;

a second sub-chamber extending from the aperture to the second port and being defined by the interior partition, the intermediate portion of the diaphragm, and the second segment of the second section of the housing; and

a third sub-chamber enclosing the coil spring and being defined by the first segment of the second section of the housing and the central and intermediate portions of the diaphragm; and

the second configuration dividing the chamber into two sub-chambers and permitting generally unrestricted fuel vapor flow between the first and second ports; and

a coil spring biasing the diaphragm toward the first configuration, the coil spring including a first end engaging the housing and a second end engaging the diaphragm; and

a fuel tank being in fuel vapor communication with the second port of the isolation valve.

5. (Amended) The fuel tank isolation valve according to claim [4] 17, wherein the diaphragm is movable to a second configuration dividing the chamber into two sub-chambers and permitting generally unrestricted fluid flow between the first and second ports.

6. (Amended) The fuel tank isolation valve according to claim [4] 17, wherein the resilient element comprises a first end engaging the housing and a second end engaging the diaphragm.

13. (Amended) The fuel tank isolation valve according to claim [4] 17, wherein the resilient element comprises a coil spring.

15. (Amended) The fuel tank isolation valve according to claim [14] 17, wherein the diaphragm occludes the aperture at the first configuration.

17. (Amended) A [The] fuel tank isolation valve [according to claim 16,] comprising:

a housing defining a chamber, the housing including a first port adapted to be connected in fluid communication with a fuel vapor collection canister, a second port adapted to be connected in fluid communication with a fuel tank, and an interior partition defining an aperture, the interior partition separating the housing in to first and second sections;

a diaphragm movable with respect to the housing, the diaphragm dividing the second section of the housing into first and second segments; and

a resilient element biasing the diaphragm toward a first configuration dividing the chamber into three sub-chambers and substantially preventing fluid flow between the first and second ports;

wherein the chamber at the first configuration comprises a first sub-chamber, a second sub-chamber, and a third sub-chamber, the first sub-chamber extending from the first port to the aperture and being defined by the interior partition, the diaphragm, and the first section of the housing, the second sub-chamber extending from the aperture to the second port and being defined by the interior partition, the diaphragm, and the second segment of the second section of the housing, and the third sub chamber enclosing the resilient element and being defined by the diaphragm and the first segment of the second section of the housing.

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